Work Environment

Purpose
The purpose of the Work Environment process area is to ensure that people have working procedures and infrastructure to meet stakeholder needs.

Major points addressed
The work environment process area emphasizes maintaining a work environment that meets the needs of stakeholders and whose availability is assured under normal as well as adverse conditions.

Goal
1.   A work environment that meets stakeholder needs is established and maintained. *(all practices)*

Practice List*
01   **Determine work environment needs:** Establish and maintain the needs and requirements to implement, operate and sustain work environments.
02   **Establish work environment standards:** Establish and maintain a description of work environment standards and tailoring guidelines that meet identified needs and requirements.
03   **Establish work environment:** Establish and maintain a work environment, tailored from the work environment standards, to meet the specific needs.
04   **Maintain the qualification of components:** Maintain the required qualification of work environment components.
05   **Maintain the qualification of personnel:** Ensure that personnel have the required competencies and qualifications to access, use, and maintain the work environment.
06   **Maintain technology awareness:** Monitor, evaluate and insert, as appropriate, new technology for improving the work environment.
07   **Ensure work environment continuity:** Plan and provide for continuity of the work environment.

(*For iCMM, Work Environment would be PA 19 and practices would be base practices numbered BP 19.01, BP 19.02, etc. For CMMI, practices would be numbered WE SP1.1, WE SP1.2, etc as specific practices of the Work Environment (WE) process area.)

Notes
The work environment is sometimes called the support environment or the infrastructure. It is the work environment for both development and operations and may include facilities, tools, equipment, computing resources, communications systems, techniques, standards, work space, laboratories, procedures, office equipment and supplies. The work environment should include appropriate procedures for operation, safety, and security. Work environment stakeholders include workers, organization and enterprise management, customers and the general public. Work environments should be established and maintained according to appropriate standards that address the full life cycle for creation, operation, improvement, sustainment, and disposal.

Relationships between this PA and other PAs
All of the other process areas are employed at the appropriate life cycle phase to establish, operate, and maintain the work environment. The work environment is used by people to perform the activities of other process areas in order to achieve enterprise objectives for products and services. The Risk Management PA is key for assuring the continuity of the work environment and ultimately the continuity of the enterprise.

01   Determine work environment needs

Establish and maintain the needs and requirements to implement, operate and sustain work environments.

Description
Obtain stakeholder needs and determine the work environment requirements appropriate to the business. Include the requirements for standards that will be used for all work environment implementations and regulations and laws pertaining to the work environment. Address an appropriate breadth of needs, including initial cost, cost to sustain, productivity, reliability, availability, performance, safety and security in determining the work environment requirements. Validate and maintain the work environment requirements to guide current work environments and future migrations in order to stay current with stakeholder needs.

Typical Work Products
- work environment regulations and laws
- identified work environment stakeholders
- stakeholder needs
- work environment requirements
- requirements for standards
- requirements for safety, security and human factors
- requirements for failure and disaster recovery

02   Establish work environment standards

Establish and maintain a description of work environment standards and tailoring guidelines that meet identified needs and requirements.

Description
Establish work environment standards that allow the organization and/or projects to benefit from commonality in tools, training, and maintenance as well as cost savings from volume purchases. Work environment standards should address the needs of all stakeholders and consider productivity, cost, availability, security, and workplace health, safety, and ergonomic factors. Work environment standards include guidelines for tailoring and/or waivers that allow adaptation of the work environment to meet specific needs.

Typical Work Products
- organizational infrastructure work environment specification
- standard work station hardware and software
- standard application software
- standard calibration equipment
- standard production equipment
- project specific work environment specifications for similar projects
- tailoring guidelines for specific project applications
- process for requesting and approving tailoring or waivers
- traceability of the work environment specification(s) to established standards

03   Establish work environment

Establish and maintain a work environment, tailored from the work environment standards, to meet the specific needs.

Description
An appropriate work environment is based on requirements and work environment standards; it comprises an infrastructure of facilities, tools and equipment that people need to perform their jobs effectively in support of mission objectives. The work environment and its components are maintained at a level of performance and reliability indicated by the work environment requirements.

Typical Work Products
- office equipment
- human environment controls (temperature, humidity, lighting, noise, visual distraction)
- equipment environment controls
- telecommunications equipment for personnel
- procedures for operation, safety and security
- personal computer hardware and software
- decision support software
- project management tools
- network infrastructure
- requirements management tools
- design tools
- configuration management tools
- test and/or evaluation equipment
- production tools
- shipping and receiving equipment and tools
- operating and maintenance manuals
- maintenance records
- maintenance and trouble shooting procedures

04   Maintain the qualification of components

Maintain the required qualification of work environment components.

Description
Work environment components include software, data bases, hardware, test equipment and appropriate documentation. Qualification of software includes configuration status, configuration audit results, build history, validation of database and configuration tables, and appropriate certifications. Hardware and test equipment qualification includes calibration and adjustment records, traceability to calibration standards and configuration status. Maintaining the qualification of work environment components ensures that their performance meets expectations. The need and frequency of qualification must be determined; qualification processes and records of qualification activities must be maintained to provide confidence in the instrumentation, control or measurement components. The qualification status of work environment components should be visible to users and the ability to change the qualification (e.g., the calibration) controlled and protected to prevent accidental or intentional changes. Procedures should be in place to identify measurement equipment that is out of calibration and take appropriate action on affected measurements.

Typical Work Products
- list of components requiring periodic calibration and schedule
- calibration parameters for each component requiring calibration
- calibration procedures
- calibration checklist
- calibration records
- instrument accuracy certificates
- safety qualification data
- record of trends or drifts in calibration error
- software qualification test plan/results

05   Maintain the qualification of personnel

Ensure that personnel have the required competencies and qualifications to access, use, and maintain the work environment.

Description
Personnel using the work environment must be qualified in appropriate areas including authorization to access the work environment, skills to operate and maintain the environment, and knowledge of safety features and procedures. The qualifications must be consistent with the standards and needs of the organization. The productivity, safety and security of the work environment depend on personnel qualifications, training and procedures.

Typical Work Products
Documented qualifications, training and evaluations for:
- operations
- maintenance
- safety
- security

06   Maintain technology awareness

Monitor, evaluate, and insert as appropriate, new technology for improving the work environment.

Description
Seek to improve the effectiveness of the work environment through the application of new technology. Establish and use mechanisms to maintain technology awareness. Evaluate new technology and manage the insertion of appropriate technology that enhances stakeholder benefits. Perform cost/benefit and impact studies for the application of new technology to the work environment, including impacts to enterprise products and services.

Typical Work Products
- subscriptions to technology publications
- disseminated results of attendance at conferences and trade shows
- technology insertion cost benefit analyses
- technology integration and impact studies
- Technology refresh plan

07 **Ensure work environment continuity**

Plan and provide for continuity of the work environment

Description
Establish and maintain plans and conduct activities to counteract interruptions to activities and to protect critical assets from the effects of failures or disasters. Failure areas that should be considered for analysis and mitigation actions include equipment, buildings, utilities, systems, software, and key personnel. Safety and security should be considered for all assets. Disasters may result from natural events (fire, flood, storms, etc.), or intentional events relating to war or terrorism. A work environment continuity management process should be implemented to reduce potential disruptions to an acceptable level through a combination of preventative and recovery controls. Contingency plans should be established and maintained to ensure that business and work environment processes can be restored within the required time frames and the plans should be practiced so that they become an integral part of the work force culture.

Typical Work Products
- list of events and circumstances that constitute a risk to business continuity
- analyses of potential business and work environment continuity risks
- contingency plans
- resource reserves to respond to disruptive events
- training plans and material for adverse events
- lists of appropriate back-up equipment to be available
- back-up personnel for key personnel
- plans and results of/for testing emergency response systems
- posted procedures for emergencies
- disseminated lists of key contacts and information resources for emergencies